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November 2, 1998

HAND DELIVERED
Magalie R. Salas, Esquire
Secretary
Federal Communications Commission
1919 M Street, NW
Room 222
Washington, D.C. 20554

Re: 1998 Biennial Regulatory Review — Amendment of Part 18 of the Commission's Rules to Update Regulations for RF Lighting Devices
ET Docket No. 98-42
***Ex Parte* Notice**

Dear Ms. Salas:

Pursuant to Section 1.1206(a)(2) of the Commission's Rules, and on behalf of Symbol Technologies, Inc., 3Com Corporation, and Harris Corporation, I am filing the original and one copy of this letter to report an oral *ex parte* communication in the above-referenced proceeding.

On Friday, October 30, 1998, the following persons met at the Commission's offices: Julius P. Knapp, Karen Rackley, Anthony Serafini, and John A. Reed, all of the Office of Engineering and Technology; Raymond A. Martino of Symbol Technologies, Inc.; Carlos Rios of 3Com Corporation; Jim Zyren of Harris Corporation; and the undersigned.

Messrs. Martino, Rios, and Zyren explained the present extent of Part 15 operations in the 2.4 GHz band, representing a market for wireless equipment alone of $1 billion per year, and the far greater use of the band expected to arise through the Bluetooth and Home RF initiatives. They argued that the public interest favors setting limits in the band for RF lighting devices that constrain interference to Part 15 devices.

Information presented at the meeting beyond that in the parties' filed comments appears in the attached handout materials.

Kindly date-stamp and return the extra copy of this letter.

If there are any questions about this filing, please call me at the number above.

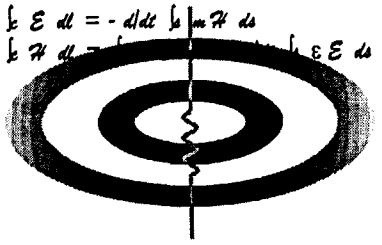
Respectfully submitted,

Mitchell Lazarus
Counsel for
3Com Corporation
Symbol Technologies, Inc.
Harris Corporation

ML:deb

Enclosures

cc: Mr. Julius P. Knapp, Office of Engineering and Technology
Ms. Karen Rackley, Office of Engineering and Technology
Mr. Anthony Serafini, Office of Engineering and Technology
Mr. John A. Reed, Office of Engineering and Technology
Mr. Raymond A. Martino, Symbol Technologies, Inc.
Scott Forsyth, Esquire, 3Com Corporation
Mr. Jeff Abramowitz, 3Com Corporation
Mr. Carlos Rios, 3Com Corporation
Mr. Jim Zyren, Harris Corporation
Leonard R. Raish, Esquire
Frank R. Jazzo, Esquire



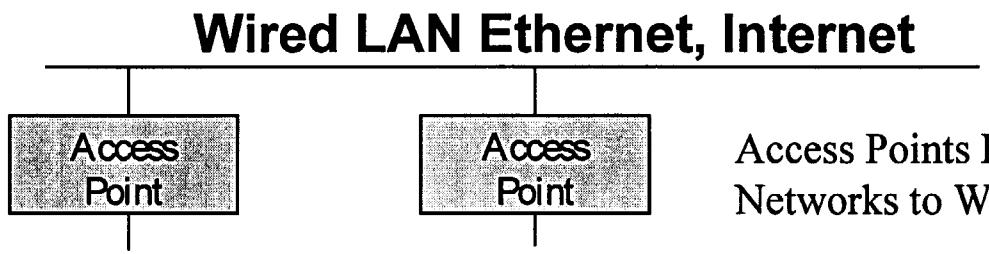
Discussion of RF Lighting NPRM (98-42) and Wireless Devices Based on the Part 15, 2450 MHz Band

AGENDA

- **Review of Part 15 Wireless Devices**
  - Products Descriptions
  - Product Benefits and Market
  - New Services and Products, Expected Growth
- **Review of NPRM Issues**
  - 2450 MHz RF Lighting In Band Emissions
  - Protection for Existing Part 15
- **Possible Compromise Accommodations**

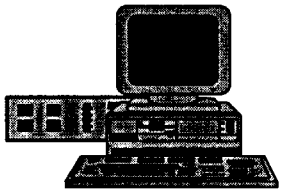
Part 15, 2450 MHz Band Wireless Products In Use Today

1&2 Mbps WLANs are Providing Many Services



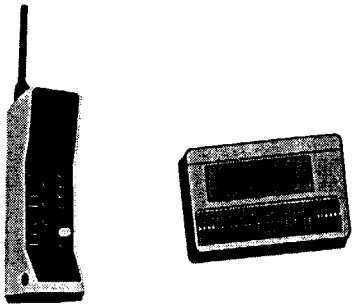
Access Points Bridge Wired Networks to Wireless Net

Hand Held Computers for Inventory Systems



Wireless PCs for Offices, Homes,

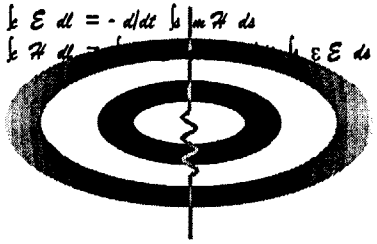
Palm PC's, Organizers Mobile e-mail and Internet



Wireless Phones and Pagers in the Office and Home using Voice over IP, Internet

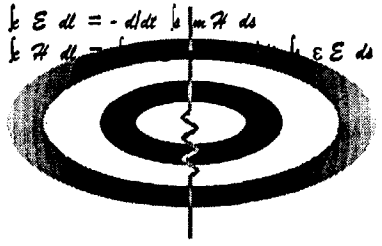
Notebook PCs for wireless network access in the office, home and enterprise

symbol



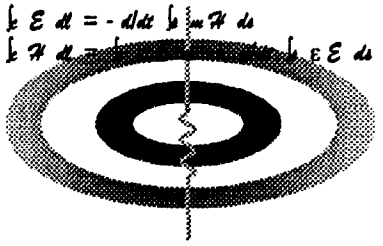
Product Services and Benefits

- **Wireless data collection and on line transactions processing for inventory control.**
  - Lowering the cost of providing goods in retail stores.
  - Lowering the cost and improving the effectiveness of transportation (UPs, Fed Ex, Trucking, …)
  - Lowering the cost of factory goods by improving inventory control and just in time manufacturing.
  - Currently $1 Billion a year of wireless devices are being produced for these markets. Along with the wireless devices themselves many times the $1 B of associated equipment including computers servers, computer SW, and services.
- **Wireless computers and computer peripherals lower the cost of providing computers and internet access to schools by eliminating the need for wiring and allowing easy sharing of computers.**



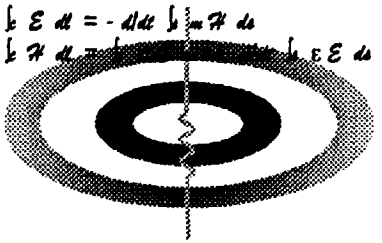
Product Services and Benefits

- **Health care wireless devices scan patient bar codes to confirm and track drug doses and enable ordering and delivery of drugs. Doctors have bed side access to records, medical references, lab results and x-rays. These services are reducing the cost and improving the effectiveness of health care.**
- **Office WLAN lower the cost of in building networks. Also provide mobile network access for internet and e-mail. Wireless voice and paging over the WLAN provide in building wireless voice without wireless service charges.**
  - Lowers business cost and improves competitiveness by providing mobile real time network access. This market is forecast to be $1 Billion by 2000.



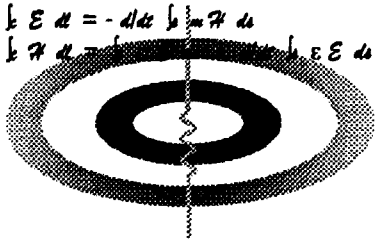
Emerging Markets for 2450 MHz Part 15 Devices

- **Bluetooth** is a consortium of more than 200 companies led by: Intel, Nokia, IBM and Ericson. Blue Tooth is developing a 2.45 GHz band frequency hopping network for interconnect of PCs and devices like phones and printers. Bluetooth members expect to include a bluetooth radio in every cell phone and notebook PC by 2000. Estimated bluetooth radios in 2000 is over 10 Million. For more information please see bluetooth.com.
- **Home RF** is a consortium of more than 50 companies led by Intel and Microsoft. Home RF is adapting the 2.45 GHHz 802.11 frequency hopping specifications for a network for the home. Volumes are expected to be consistent with a consumer product. See homerf.org for more details.



RF Lighting NPRM

- **Proposes adopting radiated emissions for lighting devices above 1 GHz. An intent of the NPRM is to enable lighting in the 2450 MHz ISM band.**
- **2450 MHz RF Lighting proponents are advocating NO radiated emission limits for their devices.**
- **Without emission limits on RF lighting that are consistent with the 2450 band services the users of and benefits being delivered by part 15 wireless services will suffer.**
- **Comments by Part 15 concerns have suggested 2450 in band limits at Class A limits (1000 uV/m, 60 dBuV/m @ 3m same as 100 uV/m, 40 dBuV/m at 30m).**

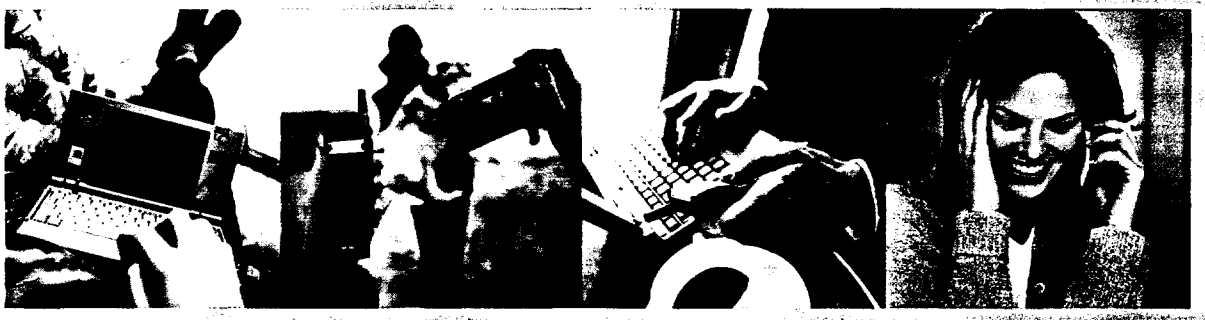


Possible Compromise Accommodations

- **RF lighting proponents have characterized 2450 band RF lighting as targeted to industrial and outdoor applications.**
- **A higher emissions limit for outdoor lighting could be justified since the distances between RF lights and wireless devices would typically be larger than indoors. Instead of 60 dBuv/m @ 3m we propose 60 dBuV/m at 30 m (80 dBuV/m @ 3 m) could be justified.**
- **For indoor applications the lights do have the potential to be near wireless devices and the limit should remain 60 dBuV/m @ 3m.**
- **In all possible outcomes the Commission should insure the safety limit of 1 mW/cm^2 @ 20 cm should be a rule, not only a voluntary limit as currently proposed. (1 mW/cm^2 is around 132 dBuV/m @ 3m).**

Bluetooth

encounters in inner space



the natural evolution of wireless technology

To develop, we must cut the cord.

The technology codenamed Bluetooth is a joint achievement of leading companies within the computer and telecommunications industries.

It is estimated that, before year 2002, Bluetooth will be a built-in feature in more than 100 million mobile phones and in several million other communication devices, ranging from headsets and portable PC's to desktop computers and notebooks.

The specifications of the Bluetooth technology has royalty-free availability.

Bluetooth is the codename for an open

Bluetooth propels you into a

specification for short-range wireless connectivity.

new dimension in wireless communication.

The technology allows users to make effortless, instant

A world where all digital devices talk spontaneously.

connections between a wide range of communication devices.

Where connectivity between computers,

It is based on a radio link for facilitating fast and

mobile phones and peripherals is as simple

secure transmissions of both voice and data.

as switching on the lights.

Bluetooth operates in a globally available frequency band

Bluetooth makes instant wireless

ensuring communication compatibility worldwide.

connections in inner space.

In short, Bluetooth is the Global Specification for Wireless Connectivity.

Bluetooth is the codename for an open specification for short-range wireless connectivity.

The technology allows users to make effortless, instant connections between a wide range of communication devices.

It is based on a radio link for facilitating fast and secure transmissions of both voice and data.

Bluetooth operates in a globally available frequency band ensuring communication compatibility worldwide.

In short, Bluetooth is the Global Specification for Wireless Connectivity.

1989: the Eastern block is liberated.

1994: South Africa is liberated.

1999: communication is liberated.

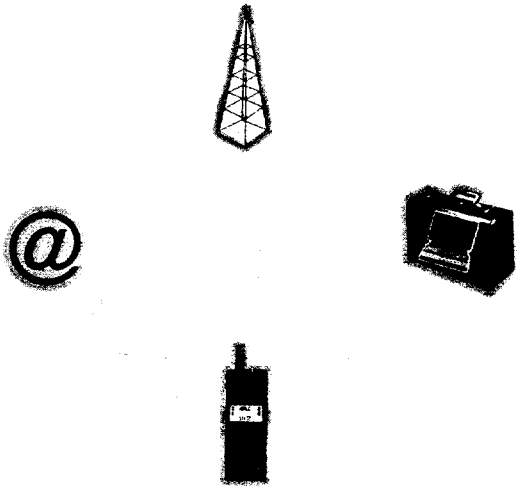
the bonds of freedom

Bluetooth eliminates the need for numerous, often proprietary, cable attachments for connecting computers, mobile phones and other peripherals.

With Bluetooth inside, connections are instant and they are maintained even when the devices are not within line-of-sight.

Consequently, the potential applications of the Bluetooth technology are virtually unlimited.

However, there are a few obvious areas where Bluetooth is of great advantage. On the following pages you'll find ten application examples.



the three-in-one phone

Use the same phone wherever you are.

When you're at the office, your phone functions as an intercom (no telephony charge).

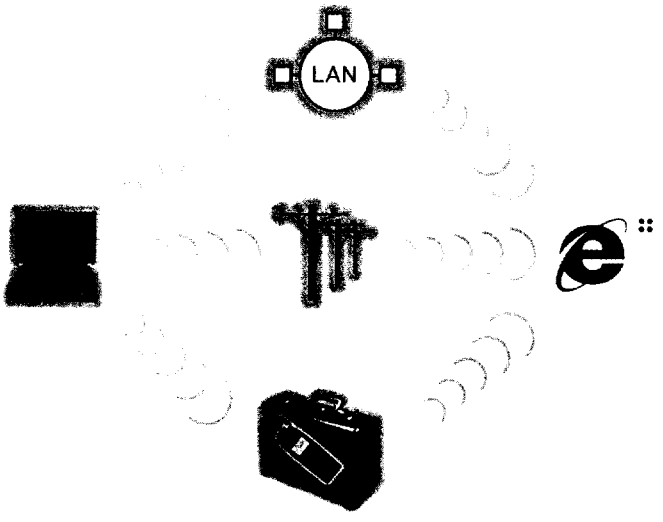
At home, it functions as a portable phone (fixed line charge).

And when you're on the move, the phone functions as a mobile phone (cellular charge).

the internet bridge

Surf the Internet regardless of the connection.

Use your portable PC to surf the Internet wherever your are, and regardless of whether you're wirelessly connected through a mobile phone (cellular) or through a wire-bound connection (PSTN, ISDN, LAN, xDSL).



the wireless workplace

Connect all peripheral tools to your PC or to the LAN.

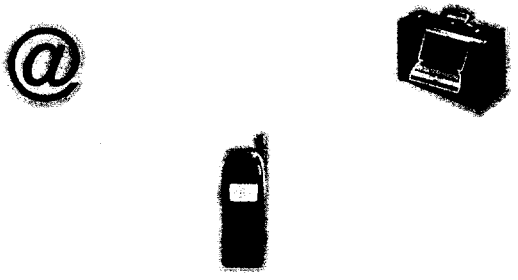
Wireless connection of your desktop or portable PC to printers, scanners and to the LAN. Increase your sense of freedom in everyday work by wireless connection of your mouse and keyboard to your PC.

the briefcase trick

(Hidden computing 1)

Use e-mail while your portable PC is still in the briefcase.

When your portable PC receives an e-mail, you'll get an alert on your mobile phone. You can also browse all incoming e-mails and read those you select in the mobile phone's window.

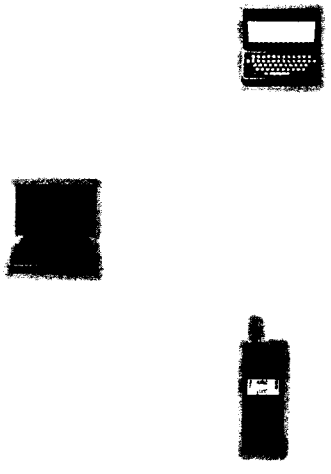


the automatic synchronizer

(Hidden computing 3)

Automatic background synchronization keeps you up-to-date.

Automatic synchronization of your desktop, portable PC, notebook (PC-PDA and PC-HPC) and your mobile phone. For instance, as soon as you enter your office the address list and calendar in your notebook will automatically be updated to agree with the one in your desktop, or vice versa.

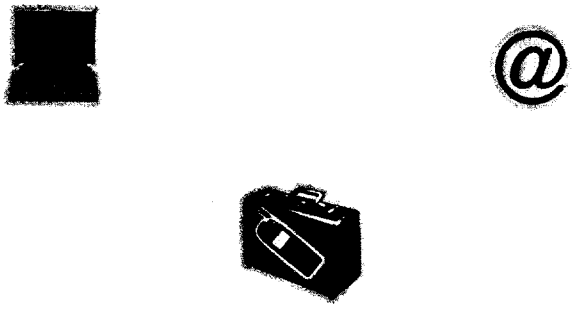


the forbidden message

(Hidden computing 2)

Write e-mails on your portable PC while you're on an aeroplane.

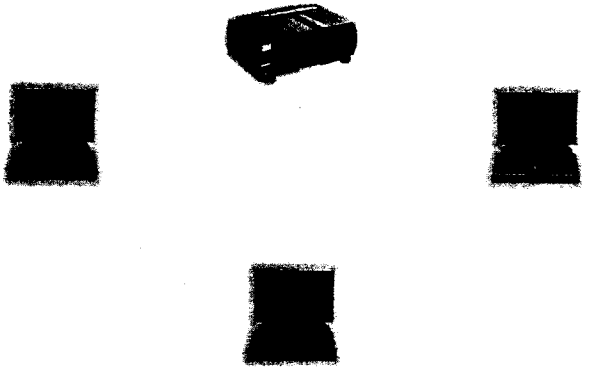
As soon as you've landed and switched on your mobile phone, all messages are sent immediately .



the interactive conference

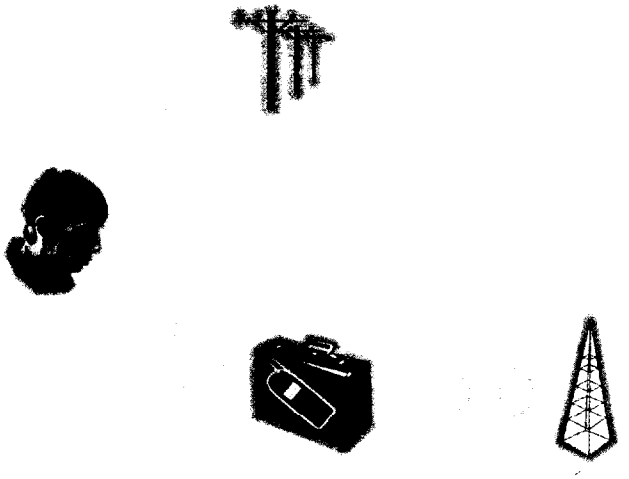
Connect all participants for instant data exchange.

In meetings and conferences, you can share information instantly with all participants, and without any cord connections. You can also wirelessly run and control, for instance, a projector.



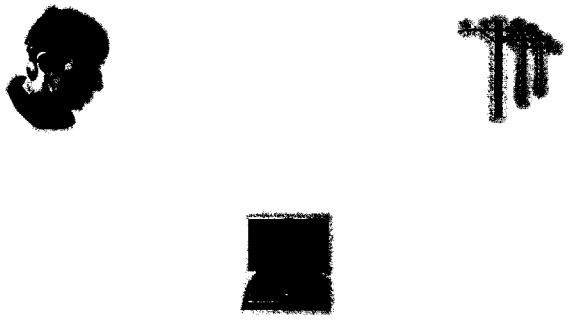
the ultimate headset

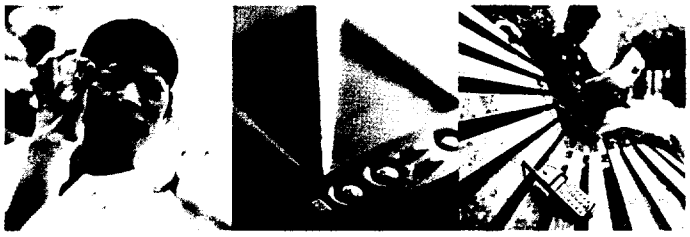
A wirelessly connected headset keeps your hands free at all times. Connect your headset to your mobile or any wire-bound connection to keep your hands free for more important tasks when you're at the office or in your car.



the portable pc speaker phone

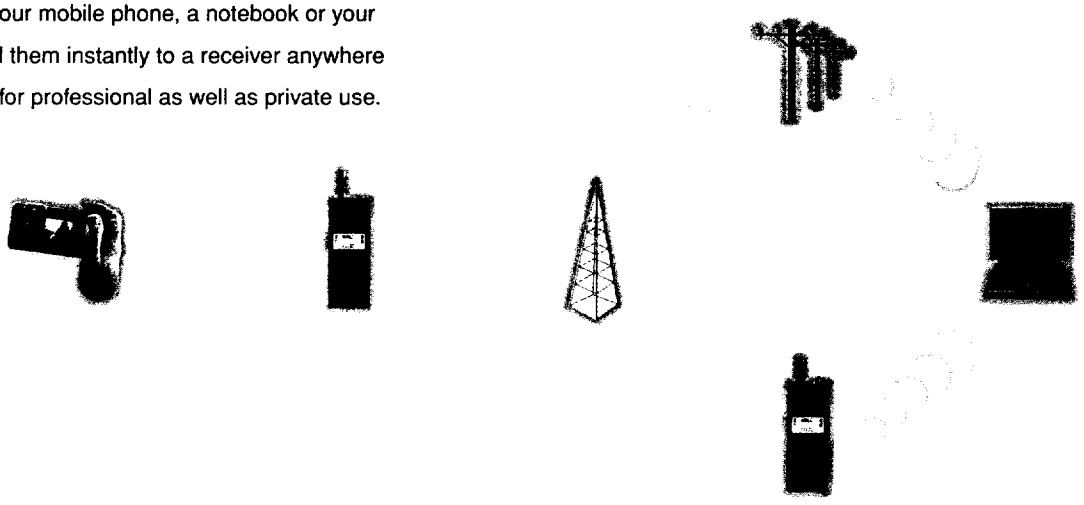
Use the portable PC as a speaker phone regardless of whether you're in your office, in your car or at home.





the instant postcard

Send instant photos and video clips from any location.
Wirelessly connect your camera to your mobile phone or any wire-bound connection.
Add comments with your mobile phone, a notebook or your portable PC and send them instantly to a receiver anywhere in the world. Suitable for professional as well as private use.



the tiny matchmaker

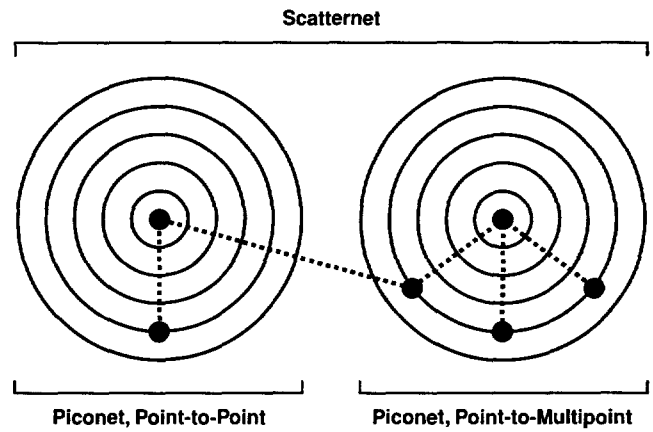
The Bluetooth radio is built into a low-cost, 9 x 9 mm microchip.

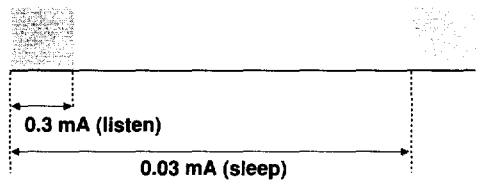
The range of each radio is approximately 10 meters. A device equipped with a Bluetooth radio establishes instant connection to another Bluetooth radio within a 10 meter radius.

Bluetooth supports both point-to-point and point-to-multipoint connections.

Several piconets can be established and linked together ad hoc and all devices in the same piconet are synchronized. The topology can best be described as a multiple piconet structure.

The full-duplex data rate within a multiple piconet structure with 10 fully-loaded, independent piconets is more than 6 Mb/s.





Bluetooth's low-power mode is only interrupted by very short signals with the purpose of verifying an established connection.

aware of its power

The Bluetooth technology limits the radio microchip's output power exactly to that actually required.

If, for instance, the receiving radio indicates that it is only a few meters away, the transmitter immediately modifies its signal strength to suit the exact range.

This feature dramatically reduces the radio's power consumption as well as its radio signal interference.

Furthermore, the radio chip automatically shifts to a low-power mode as soon as traffic volume becomes low or stops. The low-power mode is only interrupted by very short signals with the purpose of verifying the established connection.

The Bluetooth radio consumes less than 3% of the power compared with a modern mobile phone.

The transmission mode is only used as necessary, and always for the shortest possible period of time.

TECHNICAL FACTS

Normal range	10 m (0 dBm)
Optional range	100 m (+20 dBm)
Normal transmitting power	0 dBm (1 mW)
Optional transmitting power	–30 to +20 dBm (100 mW)
Receiver sensitivity	-70 dBm
Frequency band	2.4 Ghz
Gross data rate	1 Mbit/s
Max. data transfer	721+56 kbit/3 voice channels
Power consumption, hold/spark	~50 µA
Power consumption, standby	300 µA
Power consumption, max.	30 mA

Packet switching protocol based on a frequency hop scheme with 1600 hops/s.

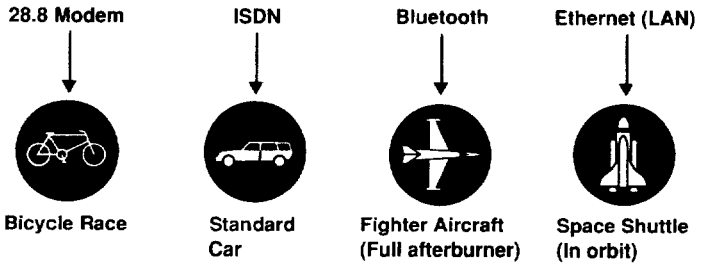
high-quality voice and data

The Bluetooth technology facilitates high-quality voice and data transmissions.

It is designed to be fully functional even in very noisy radio frequency environments, and its voice transmissions are audible under severe conditions.

The technology provides a transmission rate that is 25 times faster than a standard 28.800 modem, and each scatternet has an aggregate capacity of 6 Mbit, or 20 to 30 voice channels, without noticeable degradation.

The Bluetooth radio chip uses a globally available radio frequency band which ensures communication compatibility worldwide.



Raw bit data point-to-point transmission speed and a relative comparison in kilometers per hour.

protected transmissions

All data transfer is protected by advanced error-correction methods that ensure a high level of data security.

For the user's privacy, encryption and authentication routines are applied.

connecting inner space.

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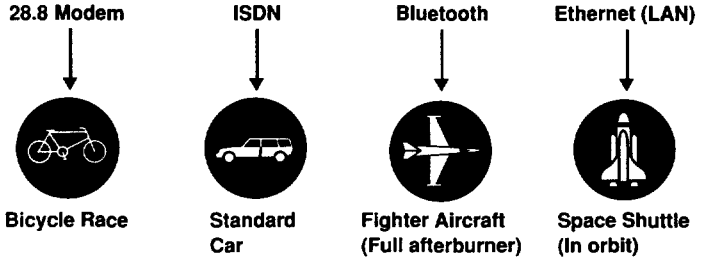

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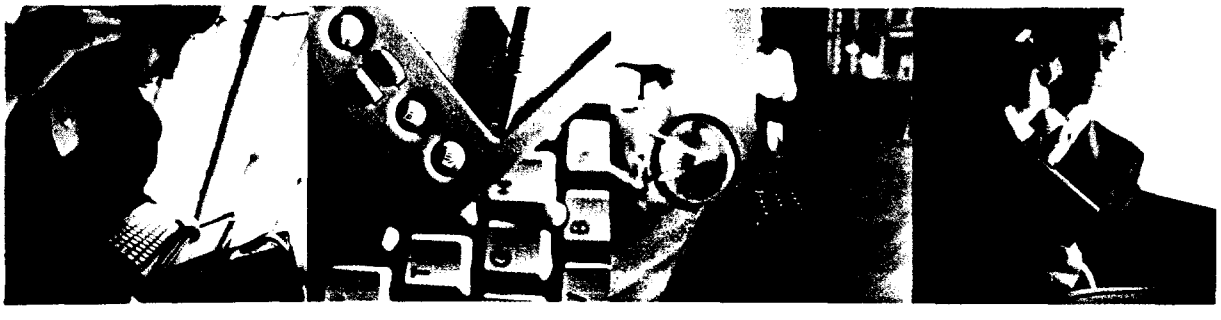

It is not just a question of connecting
to the other side of the globe.
It is as much a question of connecting
to the other side of the room.